IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application for:

Mohammad Faisal

Serial No.: 09/742,809

Filing Date: 12/19/2000

For: AUTOMATED EXTENSION FOR GENERATION OF CROSS REFERENCES IN A KNOWLEDGE BASE

Examiner: Abel Jalil, Neveen

Group Art Unit: 2175

APPEAL BRIEF

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal from the final rejection of claims 1-15 in the above-referenced application. In accordance with 37 C.F.R. § 1.192, this Brief, along with the accompanying Appendices, is filed in triplicate and is accompanied by the required fee. Please charge any additional fees or credit any overpayment to Deposit Account No. 501128.

I. REAL PARTY IN INTEREST

The real party in interest to this Appeal is Oracle International Corp., a wholly-owned subsidiary of Oracle Corporation, a Delaware Corporation, having its principal place of business in Redwood Shores, California.

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II.   RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to appellant, the appellant's legal representative, or assignees thereof.

III.   STATUS OF CLAIMS

Claims 1-15 are pending in the present application. The examiner has rejected claims 1-15. Applicant hereby appeals the rejection of claims 1-15.

IV.   STATUS OF AMENDMENTS

An Amendment was filed subsequent to final rejection. It was considered but found unpersuasive by the examiner. An Advisory Action to that effect was mailed June 26, 2003.

V.   SUMMARY OF INVENTION

Claims 1-5 are directed towards a method for generating cross-references among categories in a knowledge base. *Specification, page 3, lines 17-18.* The method includes a number of steps. First, a plurality of themes are extracted from a plurality of documents. *Specification, page 3, line 18.* The themes identify subject matter contained in corresponding documents. *Specification, page 3, lines 18-19.* A theme strength, which generally reflects the amount of subject matter directed to one theme contained in a document relative to other themes, is generated for each theme. *Specification, page 3, lines 19-24.* Theme strengths among pairs of themes are expressed as scores, and the most related themes—as indicated by scores—are

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selected. *Specification, page 3, line 24.* Themes of selected pairs are mapped to corresponding knowledge base categories, and the theme maps are used to select category pairs from the knowledge base. *Specification, page 4, lines 1-2.* Finally, a cross reference between categories of category pairs in the knowledge base is generated so as to identify an association between the category pairs. *Specification, page 4, lines 3-4.* (Also see **Figure 2**, which illustrated one embodiment for knowledge base processing, **Figure 4**, which illustrates an embodiment for calculating theme matrix scores, and **Figure 5**, which illustrates an example portion of a knowledge base including cross references and links among categories and terms.)

Claims 6-10 are directed towards a system. The system includes a search and retrieval module that receives user queries as input and generates query responses with feedback as output. *Specification, page 6, lines 13-16; Figure 1.* It further includes a knowledge base and a knowledge base processing system. *Figure 1.* The knowledge base is coupled to the search and retrieval module and is used for storing relationships among terminology. *Specification, page 5, lines 6-10; Figure 1.* The knowledge base processing system is coupled to the knowledge base. *Figure 1.* Processing steps described in relation to claims 1-5 above are performed by the knowledge base processing system. *Specification, page 6, lines 4-12.*

Claims 11-15 are directed towards a computer readable medium that includes a plurality of instructions. When executed, the instructions cause the computer to perform steps as described in reference to claims 1-5 above. *Specification, page 61, lines 15-16; Figure 7.*

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VI. ISSUES

I.   Whether the subject claims are unpatentable under 35 U.S.C. 102 over Wical (U.S. Pat. No. 5,953,718).

VII. GROUPING OF THE CLAIMS

Applicants contend that all of the pending claims (1-15) stand or fall together. Accordingly, applicants are not grouping the claims on appeal.

VIII. ARGUMENT

The examiner erred in rejecting the claimed invention by misapplying 35 U.S.C. 102. Specifically, the examiner took various phrases from the cited art—in some cases modifying their clear meaning—and tortuously combined them using applicants' own invention as a guide, in an attempt to arrive at applicants' invention.

A. Legal Concepts

1. To Anticipate a Claim, a Reference Must Teach Every Element of the Claim.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). "The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, *i.e.*, identity of terminology is not

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required." *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). *MPEP 2131.*

2. A Separate Discussion of Claim Terms Is Not a Disclosure of a Claim Element Containing a Combination of the Terms.

If a cited reference discusses various terms that appear in a claim but does not provide a relationship among the terms that is recited in the claim, then the reference is not an anticipatory disclosure. This is well-worn Federal Circuit law: "Anticipation . . . requires identity of invention: the claimed invention, <u>as described in the appropriately construed claims</u>, must be the same as that of the reference, in order to anticipate." *Glaverbel Societe Anonyme v. Northlake Marketing & Supply, Inc.*, 45 F.3d 1550, 33 USPQ2d 1496 (Fed. Cir. 1995) (emphasis added). "Every element of the claimed invention must be literally present, <u>arranged as in the claim</u>." *Richardson v. Suzuki Motor Co., Ltd.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989), *cert. denied*, 493 U.S. 853 (1989) (emphasis added). In other words, a reference that discusses a "red book" in one section, and separately discusses a "war book" in another, does not disclose a "red war book."

B. The Bounds of Claim 1

Claim 1 contains six different limitations, or elements, on a method for generating cross-references among categories in a knowledge base. The elements are as follows:

1) extracting, from a plurality of documents, a plurality of themes, wherein a theme identifies subject matter contained in a corresponding document

2) generating a theme strength for said themes, said theme strength reflects the amount of subject matter contained in a document for a corresponding theme relative to other themes in said document

3) generating a plurality of scores, from said theme strengths to identify a relative theme pair strength for at least one pair of said themes extracted from said documents, said

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theme strength reflects the amount of subject matter contained in a document for a corresponding theme relative to other themes in said document

4) selecting theme pairs based on said scores

5) selecting category pairs in said knowledge base by mapping said themes of said theme pairs selected to corresponding categories of said knowledge base

6) generating a cross reference in said knowledge base between categories of said category pairs, wherein said cross reference identifies an association between said category pairs

C.   Wical Does Not Disclose the Combination of Elements Recited Above.

In rejecting claim 1 over Wical, the examiner points to various, separate claim terms he allegedly found in the reference and improperly combines theme to arrive at the elements of the claim.

1.   Wical Does Not Generate a Cross Reference Between Category Pairs Based On an Identified Theme Pair.

Claim 1 recites a method for generating cross-references among categories in a knowledge base. The method requires that at least one theme pair be identified from a set of documents (element 3), that category pairs be selected based on theme pairs (element 5), and that a cross-reference be generated between the category pairs. In other words, claim 1 recites a method for automatically determining weighted relationships between various categories in a knowledge base.

This method is a departure from what had been described before. Specifically, in other reported cross-referencing methods, cross-references between categories were determined prior to document processing by a professional such as a linguist. This "predetermination" is described in

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Wical:

> The cross reference associations are predetermined (e.g., prior to document processing) by a linguist. In general, the linguist develops cross reference associations when two terms/categories have a strong linguistic, semantic, or usage relationship. For example, a linguist may generate a cross reference association to denote the strong association between the term "Eiffel Tower" and the category "France." [Col. 17, lns 40-47]

The reported methods, therefore, involved a substantial amount of tedious, human labor, to arrive at a limited number of category cross-references. Furthermore, once the cross-references were "predetermined," they could not be altered until a round of document processing was completed.

To support his rejection of claim 1, the examiner points to a variety of terms located in disparate locations within Wical. The examiner combines statements from two different sections, for instance, to arrive at the claim term, "identifying relative theme pair strength for at least one pair of themes": He adds the notion of ranking themes according to their theme strength (col. 7, lns 28-37) with that of the addition of theme weights to arrive at a total, quantitative theme score (col. 7, ln 61). Applicants respectfully submit that such a combination does not result in the subject claim term.

As to the selection of category pairs based on theme pairs, the examiner points to the following portion of Wical: "The knowledge base **155**, which includes categories, classified for documents **130**, identifies relationships among index heads, index context entries, and themes." The referenced statement from Wical simply seems to discuss that there are categories that identify relationships among themes. It says nothing about selecting categories, in pairs, that are related to identified theme pairs. This is due to the fact that Wical does not disclose applicants' method to

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automatically generate category cross-references.

Finally, the examiner addressed the generation of cross references between category pairs. He alleged that such generation was disclosed in Wical at column 16, lines 54-57: "When utilizing the knowledge base **155** to process queries, the distinction between a link association and cross reference association is made as described more fully below." Respectfully, this statement concerns the difference between two associations and does not concern the generation of cross references. Nothing is disclosed at all in this section regarding the way in which cross references are determined.

2. The Examiner Has Improperly Used Applicants' Disclosure as a Combination Guide

Federal courts and the U.S.P.T.O. have long understood that there is a natural tendency for examiners to view prior art through the lens of applicants' disclosure. After all, an examiner first views the art through applicants' eyes and then reviews previously published references in the area. The courts and the Office, however, have also long understood that such a view oftentimes leads one to combine disparate art elements improperly. This issue is usually seen in the context of obviousness rejections, not anticipation rejections:

> When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:
> (A) The claimed invention must be considered as a whole;
> *****
> (C) The references must be viewed without the benefit of impermissible hindsight afforded by the claimed invention; .... [MPEP 2141]

The application of this principle to 35 U.S.C. 102, though, is no less important.

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Applicants respectfully submit that the only reason the examiner had for combining disparate sections of Wical to arrive at applicants' invention is applicants' own disclosure. This can be seen from the tortuous combinations of terms, which sometimes skews the plain meaning of a phrase. In the absence of such "hindsight," no one would have interpreted such a relationship among Wical's discussed terms.

3.   The Rejection Should Be Withdrawn

Applicants respectfully contend, therefore, that the examiner's rejection is improper for at least two reasons: 1) all the elements of the subject claims do not appear in the cited reference; and, 2) the examiner has used impermissible hindsight to reconstruct applicants' invention. Applicants submit that this improper combination of phrases does not support a rejection under 35 U.S.C. 102 and that the rejection should be withdrawn.

D.   The Other Subject Claims Contain Similar Elements to Those of Claim 1

Claims 2-5 depend from claim 1, and the other independent claims (i.e., 6 and 11) contain similar elements to those of claim 1. Applicants contend, therefore, that the same arguments presented above for claim 1 apply to the rest of the claims at issue.
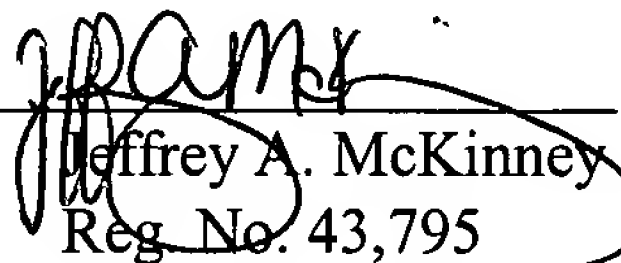
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IX. CONCLUSION.

In view of the foregoing, applicants respectfully submit that the claims are patentable.

Applicants hereby request that the Board overturn the examiner's finding that the claims are

unpatentable under 35 U.S.C. §102.

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PTO Serial No.: 09/742,809

APPENDIX

The following claims are the subject of this Appeal.

1. A method for generating cross-references among categories in a knowledge base, said method comprising the steps of:

extracting, from a plurality of documents, a plurality of themes, wherein a theme identifies subject matter contained in a corresponding document;

generating a theme strength for said themes, said theme strength reflects the amount of subject matter contained in a document for a corresponding theme relative to other themes in said document;

generating a plurality of scores, from said theme strengths, to identify a relative theme pair strength for at least one pair of said themes extracted from said documents;

selecting theme pairs based on said scores;

selecting category pairs in said knowledge base by mapping said themes of said theme pairs selected to corresponding categories of said knowledge base; and

generating a cross reference in said knowledge base between categories of said category pairs, wherein said cross reference identifies an association between said category pairs.

2. The method as set forth in claim 1, wherein the step of generating a plurality of scores comprises the steps of:

generating a matrix comprising a plurality of columns and rows to form a plurality of

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entries, wherein each column represents one of said themes and each row represents one of said themes; and

generating a score for at least a subset of said entries of said matrix, such that a score reflects a relative theme pair strength between two themes represented by said entry for said documents.

3.   The method as set forth in claim 2, wherein the step of generating a score for at least a subset of said entries of said matrix comprises the steps of:

calculating a plurality of products for an entry by multiplying theme strengths corresponding to two themes represented by said entry for each document that includes said two themes represented by said entry; and

summing said products for an entry to generate said score.

4.   The method as set forth in claim 1, wherein the step of selecting category pairs in said knowledge base comprises the steps of:

determining whether only one of said themes exist as a category in said knowledge base; if so,

generating a new category in said knowledge base for said theme;

generating a new cross-reference relationship between said new category and a category for which one of said themes exist; and

generating a new score for said new cross-reference relationship.

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5.   The method as set forth in claim 1, wherein the step of selecting category pairs in said knowledge base comprises the steps of:

determining whether both of said themes exist as categories in said knowledge base;

if so,

determining whether a cross reference relationship exists from said category pair;

if not,

generating a new cross-reference relationship between said category pair;

generating a new score for said new cross-reference relationship;

and

if so,

generating a new score for said existing cross-reference relationship.

6.   A system comprising:

search and retrieval module for receiving a user query and for generating a query response including query feedback;

a knowledge base, coupled to said search and retrieval module, for storing relationships among terminology for use as query feedback;

a knowledge base processing system, coupled to said knowledge base for processing a

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plurality of documents and automatically extending said relationships among said terminology in said knowledge base, said knowledge base processing system for extracting, from said documents, a plurality of themes, wherein a theme identifies subject matter contained in a corresponding document, for generating a theme strength for said themes, said theme strength reflects the amount of subject matter contained in a document for a corresponding theme relative to other themes in said document, for generating a plurality of scores, from said theme strengths, to identify a relative theme pair strength for at least one pair of said themes extracted from said documents, for selecting theme pairs based on said scores, for selecting category pairs in said knowledge base by mapping said themes of said theme pairs selected to corresponding categories of said knowledge base, and for generating a cross reference in said knowledge base between categories of said category pairs, wherein said cross reference identifies an association between said category pairs.

7.   The system as set forth in claim 6, wherein the knowledge base processing system further for generating a matrix comprising a plurality of columns and rows to form a plurality of entries, wherein each column represents one of said themes and each row represents one of said themes and for generating a score for at least a subset of said entries of said matrix, such that a score reflects a relative theme pair strength between two themes represented by said entry for said documents.

8.   The system as set forth in claim 7, wherein the knowledge base processing system

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further for calculating a plurality of products for an entry by multiplying theme strengths corresponding to two themes represented by said entry for each document that includes said two themes represented by said entry, and for summing said products for an entry to generate said score.

9.   The system as set forth in claim 7, wherein the knowledge base processing system further for determining whether only one of said themes exist as a category in said knowledge base, if so, for generating a new category in said knowledge base for said theme, for generating a new cross-reference relationship between said new category and a category for which one of said themes exist, and for generating a new score for said new cross-reference relationship.

10.   The system as set forth in claim 7, wherein the knowledge base processing system further for determining whether both of said themes exist as categories in said knowledge base; if so, for determining whether a cross reference relationship exists from said category pair; if not, for generating a new cross-reference relationship between said category pair, for generating a new score for said new cross-reference relationship; and if so, for generating a new score for said existing cross-reference relationship.

11.   A computer readable medium comprising a plurality of instructions, which when executed, causes the computer to perform the steps of:

extracting, from a plurality of documents, a plurality of themes, wherein a theme

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identifies subject matter contained in a corresponding document;

generating a theme strength for said themes, said theme strength reflects the amount of subject matter contained in a document for a corresponding theme relative to other themes in said document;

generating a plurality of scores, from said theme strengths, to identify a relative theme pair strength for at least one pair of said themes extracted from said documents;

selecting theme pairs based on said scores;

selecting category pairs in said knowledge base by mapping said themes of said theme pairs selected to corresponding categories of said knowledge base; and

generating a cross reference in said knowledge base between categories of said category pairs, wherein said cross reference identifies an association between said category pairs.

12.   The computer readable medium as set forth in claim 11, wherein the step of generating a plurality of scores comprises the steps of:

generating a matrix comprising a plurality of columns and rows to form a plurality of entries, wherein each column represents one of said themes and each row represents one of said themes; and

generating a score for at least a subset of said entries of said matrix, such that a score reflects a relative theme pair strength between two themes represented by said entry for said documents.

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13.   The computer readable medium as set forth in claim 12, wherein the step of generating a score for at least a subset of said entries of said matrix comprises the steps of:

calculating a plurality of products for an entry by multiplying theme strengths corresponding to two themes represented by said entry for each document that includes said two themes represented by such entry; and

summing said products for an entry to generate said score.

14.   The computer readable medium as set forth in claim 11, wherein the step of selecting category pairs in said knowledge base comprises the steps of:

determining whether only one of said themes exist as a category in said knowledge base; if so,

generating a new category in said knowledge base for said theme;

generating a new cross-reference relationship between said new category and a category for which one of said themes exist; and

generating a new score for said new cross-reference relationship.

15.   The computer readable medium as set forth in claim 11, wherein the step of selecting category pairs in said knowledge base comprises the steps of:

determining whether both of said themes exist as categories of said knowledge base; if so,

determining whether a cross reference relationship exists from said category pair;

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if not,

    generating a new cross-reference relationship between said category pair;

    generating a new score for said new cross-reference relationship; and

if so,

    generating a new score for said existing cross-reference

relationship.

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